Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 through 31 (canceled)

Claim 32 (new): A traffic information providing method comprising:

performing discrete wavelet transform on traffic information represented by a function of distance from a reference position on a road to convert the traffic information to scaling coefficients and wavelet coefficients; and

providing the resulting information.

Claim 33 (new): The traffic information providing method according to claim 32, further comprising generating sampling data based on the traffic information represented by the function of distance from the reference position and performing discrete wavelet transform on the sampling data.

Claim 34 (new): The traffic information providing method according to claim 33, further comprising performing one or more discrete wavelet transform processes on the sampling data.

Claim 35 (new): The traffic information providing method according to claim 32, further comprising providing the scaling coefficients earlier than the wavelet coefficients, and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 36 (new): The traffic information providing method according to claim 32, further comprising performing bit plane decomposition on the scaling coefficients and wavelet coefficients and providing the resulting coefficients.

Claim 37 (new): The traffic information providing method according to claim 36, further comprising appending copyright information to the low-order bits of the scaling coefficients or wavelet coefficients and providing the resulting coefficients.

Claim 38 (new): The traffic information providing method according to claim 36, further comprising encrypting part of the bit planes of the bit-plane decomposed scaling coefficients and wavelet coefficients and providing the resulting coefficients.

Claim 39 (new): The traffic information providing method according to claim 32, further comprising processing the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 40 (new): The traffic information providing method according to claim 39, further comprising providing the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 41 (new): A traffic information providing method comprising:

performing discrete wavelet transform on traffic information represented by a function of time to convert the traffic information to scaling coefficients and wavelet coefficients; and

providing the resulting information.

Claim 42 (new): The traffic information providing method according to claim 41, further comprising using the traffic information sampled at a fixed time pitch as sampling data and performing discrete wavelet transform on the sampling data.

Claim 43 (new): The traffic information providing method according to claim 42, further comprising performing one or more discrete wavelet transform processes on the sampling data.

Claim 44 (new): The traffic information providing method according to claim 41, further comprising providing the scaling coefficients earlier than the wavelet coefficients, and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 45 (new): The traffic information providing method according to claim 41, further comprising performing bit plane decomposition on the scaling coefficients and wavelet coefficients and providing the resulting coefficients.

Claim 46 (new): The traffic information providing method according to claim 45, further comprising appending copyright information to the low-order bits of the scaling coefficients or wavelet coefficients and providing the resulting coefficients.

Claim 47 (new): The traffic information providing method according to claim 45, further comprising encrypting

part of the bit planes of the bit-plane decomposed scaling coefficients and wavelet coefficients and providing the resulting coefficients.

Claim 48 (new): The traffic information providing method according to claim 41, further comprising performing one or more to N discrete wavelet transform processes on the reciprocal multiplied by the constant.

Claim 49 (new): The traffic information providing method according to claim 41, further comprising processing the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 50 (new): The traffic information providing method according to claims 49, further comprising providing the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 51 (new): A traffic information providing system comprising:

a traffic information providing apparatus for generating sampling data from traffic information

represented by a function of distance from a reference position on a road, performing one or more discrete wavelet transform processes on the sampling data to convert the traffic information to scaling coefficients and wavelet coefficients, and providing the coefficients; and

a traffic information utilization apparatus for performing one or more inverse discrete wavelet transform processes on the scaling coefficients and wavelet coefficients received from the traffic information providing apparatus to restore the traffic information.

Claim 52 (new): The traffic information providing system according to claim 51, wherein the traffic information providing apparatus provides the scaling coefficients earlier than the wavelet coefficients and provides, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients and the traffic information utilization apparatus performs inverse discrete wavelet transform on the scaling coefficients and the received wavelet coefficients to restore the traffic information.

Claim 53 (new): The traffic information providing system according to claim 52, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet

coefficients and provides the coefficients and the traffic information utilization apparatus starts to restore the traffic information on receiving the bit information of part of the bit-plane-decomposed scaling coefficients and wavelet coefficients.

Claim 54 (new): The traffic information providing system according to claim 51, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet coefficients, appends copyright information to the low-order bits of the scaling coefficients or wavelet coefficients, and provides the coefficients, and the traffic information utilization apparatus deletes the copyright information appended to the scaling coefficients or wavelet coefficients and performs the inverse discrete wavelet transform.

Claim 55 (new): The traffic information providing system according to claim 51, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet coefficients, encrypts some of the bit planes of the scaling coefficients or wavelet coefficients, and provides the coefficients and that the traffic information utilization apparatus decodes the encrypted scaling

coefficients or wavelet coefficients and performs the inverse discrete wavelet transform.

Claim 56 (new): The traffic information providing system according to claim 51, wherein the traffic information providing apparatus processes the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 57 (new): The traffic information providing method according to claim 56, wherein the traffic information providing apparatus provides the scaling coefficients earlier than the wavelet coefficients and provides, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 58 (new): A traffic information providing system comprising:

a traffic information providing apparatus for using traffic information measured at a fixed time pitch as sampling data, performing one or more discrete wavelet transform processes on the sampling data to convert the traffic information to scaling coefficients and wavelet coefficients, and providing the coefficients; and

a traffic information utilization apparatus for performing one or more inverse discrete wavelet transform processes on the scaling coefficients and wavelet coefficients received from the traffic information providing apparatus to restore the traffic information.

Claim 59 (new): The traffic information providing system according to claim 58, wherein the traffic information providing apparatus provides the scaling coefficients earlier than the wavelet coefficients and provides, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients and the traffic information utilization apparatus performs inverse discrete wavelet transform on the scaling coefficients and the received wavelet coefficients to restore the traffic information.

Claim 60 (new): The traffic information providing system according to claim 59, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet coefficients and provides the coefficients and the traffic information utilization apparatus starts to restore the traffic information on receiving the bit information of part of the bit-plane-decomposed scaling coefficients and wavelet coefficients.

Claim 61 (new): The traffic information providing system according to claim 58, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet coefficients, appends copyright information to the low-order bits of the scaling coefficients or wavelet coefficients, and provides the coefficients, and the traffic information utilization apparatus deletes the copyright information appended to the scaling coefficients or wavelet coefficients and performs the inverse discrete wavelet transform.

Claim 62 (new): The traffic information providing system according to claim 58, wherein the traffic information providing apparatus performs bit plane decomposition on the scaling coefficients and wavelet coefficients, encrypts some of the bit planes of the scaling coefficients or wavelet coefficients, and provides the coefficients and that the traffic information utilization apparatus decodes the encrypted scaling coefficients or wavelet coefficients and performs the inverse discrete wavelet transform.

Claim 63 (new): The traffic information providing method according to claim 58, wherein the traffic information providing apparatus processes the wavelet

coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 64 (new): The traffic information providing method according to claim 59, wherein the traffic information providing apparatus provides the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 65 (new): A traffic information providing apparatus comprising:

traffic information conversion means for generating sampling data from the collected traffic information data;

traffic information encoding means for performing one or more discrete wavelet transform processes on the sampling data to convert the traffic information to scaling coefficients and wavelet coefficients; and

traffic information transmission means for transmitting the scaling coefficients earlier than the wavelet coefficients and transmitting, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 66 (new): The traffic information providing method according to claim 65, further comprising means for processing the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 67 (new): The traffic information providing method according to claim 66, further comprising means for providing the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 68 (new): Traffic information utilization apparatus comprising:

traffic information reception means for receiving from a traffic information providing apparatus road section reference data representing a target road of traffic information and scaling coefficients and wavelet coefficients as traffic information;

target road determination means for identifying the target road of the traffic information by using the road section reference data; and

traffic information decoding means for performing one or more inverse discrete wavelet transform processes on the

scaling coefficients and wavelet coefficients in order to restore the traffic information.

Claim 69 (new): The traffic information providing method according to claim 68, further comprising means for processing the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 70 (new): The traffic information providing method according to claim 69, further comprising means for providing the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 71 (new): A traffic information providing method comprising:

performing discrete wavelet transform on a reciprocal of speed information represented by a function of distance from a reference position on a road to convert the reciprocal of the speed information to scaling coefficients and wavelet coefficients; and

providing the coefficients.

Claim 72 (new): The traffic information providing method according to claim 71, further comprising generating 2N sampling data items or a multiple of the 2N sampling data items from the speed information represented by the function of distance from the reference position and performing discrete wavelet transform on the reciprocal of the sampling data.

Claim 73 (new): The traffic information providing method according to claim 71, further comprising multiplying the reciprocal of the sampling data by a constant, performing discrete wavelet transform on the reciprocal multiplied by the constant to convert the inverses to scaling coefficients and wavelet coefficients, converting the scaling coefficients and wavelet coefficients to integers and providing the integers.

Claim 74 (new): The traffic information providing method according to claim 73, further comprising switching magnitude of the constant in response to a speed limit of the target road or average vehicle travel speed.

Claim 75 (new): The traffic information providing method according to claim 71, further comprising processing the wavelet coefficients having absolute values equal to or

below a predetermined value as values of 0 and provides the coefficients.

Claim 76 (new): The traffic information providing method according to claim 75, further comprising providing the scaling coefficients earlier than the wavelet coefficients and providing, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 77 (new): A traffic information providing system comprising:

traffic information providing apparatus for generating sampling data from speed information represented by a function of distance from a reference position on a road, performing one or more discrete wavelet transform processes on the reciprocal of the sampling data to convert the reciprocal of the speed information to scaling coefficients and wavelet coefficients, and providing the coefficients; and

traffic information utilization apparatus for performing one or more inverse discrete wavelet transform processes on the scaling coefficients and wavelet coefficients received from the traffic information providing apparatus, converting the obtained value to its reciprocal, and restoring the speed information.

Claim 78 (new): The traffic information providing system according to claim 77, wherein the traffic information providing apparatus multiplies the reciprocals of the sampling data by a constant, performs inverse wavelet transform on the reciprocals multiplied by the constant to convert the reciprocals to scaling coefficients and wavelet coefficients, converts the scaling coefficients and wavelet coefficients to integers and provides the integers to the traffic information utilization apparatus and the traffic information utilization apparatus performs inverse discrete wavelet transform on the scaling coefficients and wavelet coefficients, multiplies the reciprocal of an obtained value by the constant, and restores the speed information.

Claim 79 (new): The traffic information providing system according to claim 77, wherein the traffic information providing apparatus provides the scaling coefficients earlier than the wavelet coefficients and provides, among the wavelet coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients and the traffic information utilization apparatus performs inverse discrete wavelet transform on the scaling coefficients and the received wavelet coefficients, converts an obtained value to a reciprocal and restores the speed information.

Claim 80 (new): The traffic information providing system according to claim 79, wherein the traffic information providing apparatus switches magnitude of the constant in response to a speed limit of the target road or average vehicle travel speed.

Claim 81 (new): The traffic information providing system according to claim 77, wherein the traffic information providing apparatus processes the wavelet coefficients having absolute values equal to or below a predetermined value as values of 0 and provides the coefficients.

Claim 82 (new): A traffic information providing apparatus comprising:

traffic information conversion means for generating 2N sampling data items or a multiple of the 2N sampling data items from collected speed information data;

traffic information encoding means for performing one or more discrete wavelet transform processes on reciprocals of the sampling data to convert the reciprocals to scaling coefficients and wavelet coefficients; and

traffic information transmission means for transmitting the scaling coefficients earlier than the wavelet coefficients and transmitting, among the wavelet

coefficients, high-order wavelet coefficients earlier than low-order wavelet coefficients.

Claim 83 (new): A traffic information utilization apparatus comprising:

·traffic information reception means for receiving from a traffic information providing apparatus a road section reference data representing a target road of traffic information and scaling coefficients and wavelet coefficients as traffic information;

target road determination means for identifying the target road of the traffic information by using the road section reference data; and

traffic information decoding means for performing one or more inverse discrete wavelet transform processes on the scaling coefficients and wavelet coefficients, converting an obtained value to reciprocals, and restoring the speed information.